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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/690,388

10/21/2003

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02/02/2007

EXAMINER

QI, ZHI QIANG

ART UNIT

PAPER NUMBER

2871

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/02/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/690,388	<b>Applicant(s)</b> GUREVICH ET AL.	
	<b>Examiner</b> Mike Qi	<b>Art Unit</b> 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10, 12-18 and 20-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10, 12-18 and 20-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                            |                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-8, 10, 13-18, 20 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,462,805 B1 (Wu et al) in view of US 4,093,356 (Bigelow), and further in view of US 4,991,941 (Kalmanash).

Regarding claims 1, 8, 10, 18, 20 and 26, Wu teaches (col.6, line 57 – col.7, line 54; Figs.3A, 3B) that a liquid crystal display comprising:

- back light (light source 350 and mirror 360) on a bottom surface of the display device for generating light and transmitting light;
- circular polarizer (330-B) (first circular polarizer or internal circular polarizer) having lower side (first side) adjacent to a upper side (first side) of the back light (350, 360);
- liquid crystal display (320) having a lower side (first side) adjacent to a upper side (second side) of the circular polarizer (330-B) (first circular polarizer);
- transfective mirror (340) (two-way mirror) is positioned on the outer surface of the rear substrate (310-B) (outer surface of the LCD), i.e., having a upper side (first side) adjacent to a lower side (first side) of the liquid crystal display (320);

- circular polarizer (330-A) (second circular polarizer or external circular polarizer) having a lower side (first side) adjacent to the upper side (second side) of the liquid crystal display (320); and the circular polarizer having the function to absorb the reflected external incident light and transmitted light, and that is the property of the circular polarizer;
- liquid crystal display (320) interposed between the first circular polarizer (330-B) and the second circular polarizer (330-A).

Wu does not explicitly teach a first circular X-polarizer and a second circular X-Polarizer, and the liquid crystal display set to quarter-wave retardation.

According to the specification (such as paragraph 0006), each of the ECP 20 (external circular polarizer) and ICP 30 (internal circular polarizer) includes a linear X-polarizer in combination with a quarter wave plate. Therefore, the circular X-polarizer is a linear X-polarizer in combination with a quarter wave plate.

**Bigelow** teaches (col.3, line 5 – col.4, line 52; Figure) using a linear X-polarizer (40) with a quarter-wave plate (35) (the linearly polarization in X-direction such as polarization vector 41), so as to emerge a light beam having circular polarization, and that this functions as a circular X-polarizer. Generally, a circular X-polarizer is formed from the linear X-polarizer and the quarter wave plate. The second circular polarizer in Wu either a circular X-polarizer or a circular Y-polarizer has an equivalent function to absorb light except obtaining an inversed image (bright and dark). This is the same as the equivalent of having an ON voltage produce a bright spot and an OFF voltage produce a dark spot, and having an OFF voltage produce a dark spot and an ON

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voltage produce a bright spot. These are art-recognized equivalents, so it would have been obvious to use a circular X-polarizer. The skilled in the art would be benefited from the liquid crystal structure of Wu using circular polarizer and benefited from the circular polarizer having linear X-polarizer in combination with the quarter wave plate to form the first circular X-polarizer (internal circular X-polarizer) and the second circular X-polarizer (external circular X-polarizer), and such transfective display obtaining transmissive display and facilitate use of the display in reflective mode (see col.1, lines 55 – 68 in Bigelow), thus improving the light utilization efficiency.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the image display device of Wu with the teachings of the combination of the linear X-polarizer and the  $\lambda/4$  plate forming a circular X-polarizer as taught by Bigelow, since the skilled in the art would be motivated for improving the light utilization efficiency.

Wu and Bigelow teach the invention set forth above except for that the liquid crystal display set to quarter-wave retardation.

**Kalmanash** teaches (col.7, lines 49-57) that liquid crystal cell functions as a zero-to-quarter wave retarder. Kalmanash further teaches (col.8, lines 9-10) that liquid crystal cell has been set to provide for a quarter wave retardation. Kalmanash further teaches (col.2, lines 48-52) that such improved display has higher transmission and reduced surface reflections and therefore reduced glare.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the image display of Wu and Bigelow with the teachings

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of the liquid crystal display set to provide for a quarter wave retardation as taught by Kalmanash, since the skilled in the art would be motivated for achieving higher transmission and reduced surface reflections and therefore reduced glare.

Regarding claims 3 and 13, Wu teaches (col.4, lines 36-39) that the device is a transflective display.

Regarding claims 4-5, 14-15, Wu teaches (col.4, lines 36-39) that the device is a reflective display using a front-lit (front light).

Regarding claims 6-7 and 16-17, Wu, Bigelow and Koyama teach the invention set forth above except for that the first and second X-polarizers arranged on the outer surface and quarter-wave plates on the inner surface.

Wu further teaches (Figs.3a, 3B) the circular polarizers (330-a, 330-B) are arranged on the outer surface of the display. Bigelow further teaches (col.3, line 5 – col.4, line 52; Figure) that the X-polarizers arranged on the outer surface and quarter-wave plate on the inner surface, such as shown in the Figure, so that the X-polarizers are arranged on the outer surface and the quarter-wave plates on the inner surface, and such transflective display obtaining transmissive display and facilitate use of the display in reflective mode (see col.1, lines 55 – 68), thus improving the light utilization efficiency.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the image display device of Wu, Bigelow and Koyama with the teachings of the combination of the linear X-polarizer and the  $\lambda/4$  plate as

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taught by Bigelow, since the skilled in the art would be motivated for improving the light utilization efficiency (see col.1, lines 55 – 68).

3. Claims 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu, Bigelow and Kalmanash as applied to claims 1, 3-8, 10,13-18, 20 and 26 above, and further in view of US 6,738,117 B2 (Minakuchi).

Regarding claims 2 and 12, Wu, Bigelow and Kalmanash teach the invention set forth above except for using touch pad between the second (upper) circular polarizer and liquid crystal display.

Minakuchi teaches (col.6, lines 58 – 64; Fig.8) that using touch panel (4) as a transparent protection plate. Minakuchi indicates (col.1, lines 40-41) that a polarizing plate and a quarter-wave plate would obtain a circular polarizing plate, so that the polarizing plate (2) and quarter-wave plate (1) would form a circular polarizer. Therefore, the touch panel (4) is arranged between the circular polarizer and the liquid crystal display (20). Minakuchi indicates (col.1, line 66 – col.2, line 2) that such protection plate (using touch panel as a transparent protection plate) improves the brightness, visibility and viewing angle characteristic of the display.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the image display device of Wu, Bigelow and Kalmanash with the teachings of a touch pad between the circular polarizer and the liquid crystal display as taught by Minakuchi, since the skilled in the art would be motivated for achieving the improvement of the brightness, visibility and viewing angle characteristic of the display and protecting the viewing screen (see col.1, line 66-col.2, line 2), and the

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combination of the touch panel with circular polarizing plate would improve coloring of a displayed view in an oblique direction (see col.2, lines 4-8).

4. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu, Bigelow and Kalmanash as applied to claims 1, 3-8, 10,13-18, 20 and 26 above, and further in view of US 6,642,977 B2 (Kotchick et al).

Regarding claim 21-23, Wu, Bigelow and Kalmanash teach the invention set forth above except for that the display device is used in a computing device having a processor processing data, such as a mobile computing device having wireless communication arrangement.

Kotchick teaches (col.18, lines 6-33; Fig.9-10) that using computer system having processing unit (CPU) processing data, such as using phone to collect data, and through wireless connection being connected to a computer network, and that the liquid crystal display used in the computing device would only given weight as an intended use as any display can be used in that computing device, and that would have been at least obvious.

5. Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu, Bigelow, Kalmanash and Kotchick as applied to claims 1, 3-8, 10,13-18, 20 and 26 and 21-23 above, and further in view of US 5,548,108 (Moldskred et al).

Regarding claims 24-25, Wu, Bigelow, Kalmanash and Kotchick teach the invention set forth above except for a data capturing arrangement obtaining data, such as using barcode reader or RFID reader.



Moldskred teaches (col.1, lines 20-53) that it is known in the art to use a non-contact scanning device to cause a beam of light to scan across an area containing a barcode, and such scanning symbols would decode and store data fast where a large number of symbols are read within a short period of time, and that is used in the known market.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the image display device of Wu, Bigelow, Kalmanash and Kotchick with the teachings of data capturing arrangement obtaining data, such as using barcode reader or RFID reader as taught by Moldskred, since the skilled in the art would be motivated for achieving a large number of symbols are read within a short period of time (see col.1, lines 20-53).

### ***Response to Arguments***

6. Applicant's arguments filed on Jan.12, 2007 have been fully considered but they are not persuasive.

In response to applicant's argument that the references do not teach a liquid crystal display set to quarter-wave retardation, it is respectfully pointed out that Kalmanash teaches (col.7, lines 49-57) that liquid crystal cell functions as a zero-to-quarter wave retarder, and Kalmanash further teaches (col.8, lines 9-10) that liquid crystal cell has been set to provide for a quarter wave retardation, and Kalmanash further teaches (col.2, lines 48-52) that such improved display has higher transmission

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and reduced surface reflections and therefore reduced glare. Therefore, the combination of the references would render obvious.

The prior art of record such as US 6,618,113 (Ulrich et al) further teaches (col.6, lines 62-63; Fig.8) that a liquid crystal layer (23) acts as a quarter wave retarder, and US 6,091,462 (Sharp et al) further teaches (col.11, lines 28-29) that the liquid crystal cell is a quarter-wave retarder. Therefore, using a liquid crystal display set to quarter-wave retardation would have been obvious in the art.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299.

The examiner can normally be reached on M-T 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*206*

Mike Qi  
Patent examiner  
Jan.30,2007